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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/500,581

11/05/2004

Masayuki Takenaka

Q81943

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EXAMINER

NGUYEN, HANH N

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/500,581

Applicant(s)

TAKENAKA ET AL.

Examiner

Nguyen N. Hanh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed on 7/1/2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. Copies of "JP 8-65944, JP 2002-185175, JP 5-283878, JP 7-298552, JP 7-288949, JP 2001-238405, JP 2001-238406, JP 2001-119898" are not found. They have been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Uchida et al.

Regarding claim 1, Uchida et al. disclose a drive unit including: an electric motor (M in Figs. 3 and 6), a drive unit casing (C in Fig. 5 and Col. 5, line 48) accommodating therein the electric motor, an inverter (Col. 7, line 60) that controls the electric motor, and a flow passage (Lc in Fig. 5) of a refrigerant that cools the inverter, the drive unit characterized in that the inverter is mounted on the drive unit casing such that a heat

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sink (51) united with a substrate of the inverter defines a space (Fig. 5) on a portion thereof opposed to the drive unit casing, the space is communicated to the flow passage of the refrigerant (Col. 8, lines 1-10), the heat sink comprises heat-sink side fins (Fig. 5) extending into the space toward the drive unit casing, the drive unit casing comprises drive-unit-casing side fins (20b) extending into the space toward the heat sink, and the heat-sink side fins and the drive-unit-casing side fins are apart from each other.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 5, 7, 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US 6,323,613) in view of Iverson et al.

Regarding claim 1, Hara et al. show a drive unit (Col. 4, lines 15-17) including: an electric motor (M in Fig. 6), a drive unit casing (10 in Figs. 5, 6 and 7) accommodating therein the electric motor, an inverter that controls the electric motor (Col. 6, lines 55-57), and a flow passage (Fig. 6) of a refrigerant that cools the inverter, the drive unit characterized in that the inverter is mounted on the drive unit casing such that a heat sink (11) united with a substrate of the inverter defines a space (Fig. 6) on a portion thereof opposed to the drive unit casing, the space is communicated to the flow passage of the refrigerant. Hara et al. fail to show the heat sink comprises heat-sink

side fins extending into the space toward the drive unit casing and the heat-sink side fins and the drive-unit-casing side fins are apart from each other.

However, Iversen et al. disclose a cooling structure for electronic component (24 in Fig. 10) wherein the heat sink comprises heat-sink side fins (37) extending into the space toward the other heat sink and the heat-sink side fins and the other heat sink side fins (78) are apart from each other (by conduit 32) for the purpose of enhancing heat transfer (Col. 15, line 60).

Since Hara et al. and Iversen et al. are in the same field of endeavor, the purpose disclosed by Iversen et al. would have been recognized in the pertinent art of Hara et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hara et al. by forming heat-sink side fins extending into the space toward the drive unit casing and the heat-sink side fins and the drive-unit-casing side fins are apart from each other as taught by Iversen et al. for the purpose of enhancing heat transfer.

Regarding claim 2, Iversen et al. also show the heat-sink side fins (37 and 78) cooperatively generate a common refrigerant flow pattern within the space (32).

Regarding claims 4 and 9, Iversen et al. also show the heat-sink side fins (37 and 78) cooperatively and substantially cross the space with a minute gap therebetween.

Regarding claims 5, 7, 10 and 12, Iversen et al. also show the heat-sink side fins (37 and 78) comprise the same fins.

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4. Claims 3, 6, 8, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US 6,323,613) in view of Iverson et al. and further in view of Lopatinsky et al.

Regarding claims 3, 6, 8, 11 and 13, Hara et al. and Iverson et al. show all limitations of the claimed invention except showing one of the heat-sink side fins and the drive-unit-casing side fins comprises rib-shaped fins and the other of them comprises pin-shaped fins or both the heat-sink side fins and the drive-unit-casing side fins comprise pin-shaped fins.

However, Lopatinsky et al. disclose a cooling structure for an electric machine using pin-shaped fins (6 in Fig. 1B) for the purpose of increasing cooling capacity of the heat sink

Since Hara et al., Iverson et al. and Lopatinsky et al. are in the same field of endeavor, the purpose disclosed by Lopatinsky et al. would have been recognized in the pertinent art of Hara et al. and Iverson et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Hara et al. and Iverson et al. by using pin-shaped fins on one of the heat-sink side and the drive-unit-casing side or on both the heat-sink side and the drive-unit-casing side as taught by Lopatinsky et al. for the purpose of increasing cooling capacity of the heat sink.

Conclusion

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (571) 272-2031. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg, can be reached on (571) 272-2044. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

HNN

July 26, 2005


DARREN SCHUBERG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800